

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (Currently Amended): A method for generating singlet oxygen by reacting a polymer-immobilized photosensitizer with oxygen in the presence of visible light which is absorbed by the photosensitizer wherein the polymer-immobilized
5 photosensitizer comprises a cross-linked polymer backbone to which is bound a plurality of photosensitizer groups and a plurality of cationic groups $^+QR_3$ wherein Q is selected from the group consisting of phosphorus and nitrogen, each R is independently a straight, branched or cyclic alkyl group of 1
10 to about 20 carbons or an aralkyl group and the average total number of carbon atoms in the group QR_3 is at least four.

Claim 2 (Original): The method of Claim 1 wherein the average total number of carbon atoms in the group QR_3 in the polymer-immobilized photosensitizer is from 4 to about 40.

Claim 3 (Original): The method of Claim 1 wherein the average total number of carbon atoms in the group QR_3 in the polymer-immobilized photosensitizer is from 12 to about 30.

Claim 4 (Original): The method of Claim 1 wherein all groups QR_3 in the polymer-immobilized photosensitizer are identical.

Claim 5 (Original): The method of Claim 1 wherein the polymer-immobilized photosensitizer comprises at least two different groups QR_3 .

Claim 6 (Original):. The method of Claim 4 wherein each Q in the polymer-immobilized photosensitizer is a phosphorus atom.

Claim 7 (Original): The method of Claim 1 wherein the photosensitizer group is selected from Rose Bengal, Eosin Y, Alizarin Red S, Congo Red, Orange G, fluorescein dyes, rhodamine dyes, Erythrosin B, chlorophyllin trisodium salt,
5 salts of hemin, hematoporphyrin, Methylene Blue, Crystal Violet and Malachite Green.

Claim 8 (Original): The method of Claim 1 wherein the photosensitizer group is Rose Bengal.

Claim 9 (Original): The method of Claim 1 wherein the photosensitizer groups are covalently linked to the polymer backbone through linker groups.

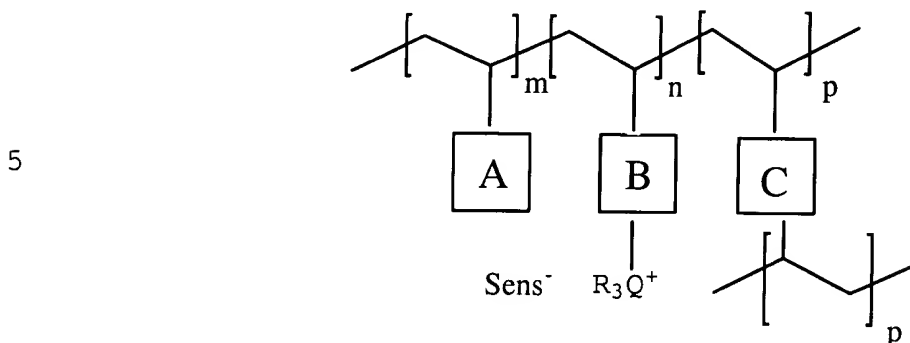
Claim 10 (Original): The method of Claim 1 wherein the photosensitizer groups are bound to the polymer by electrostatic attraction to the cationic groups.

Claim 11 (Original): The method of Claim 1 wherein each Q in the polymer-immobilized photosensitizer is a phosphorus atom, the average total number of carbon atoms in the group QR_3 is from 12 to about 30 and the photosensitizer group is Rose Bengal.

Claim 12 (Original): The method of Claim 1 performed in a solvent.

Claim 13 (Currently Amended): The method of Claim 1 wherein polymer-immobilized photosensitizer is in the form of small particles having a diameter of less than about 0.2 mm.

Claim 14 (Original): The method of Claim 1 wherein the polymer-immobilized photosensitizer has the formula:



wherein A, B and C together with the two carbons of the polymer chain represent ethylenically unsaturated monomer units which can include alkyl substituents on the chains, A is a monovalent group selected from hydrogen, halogen, alkyl, aryl, aralkyl, carboxyl ester -COOR, oxycarbonyl, -OC(=O)R, and carboxamide -C(=O)NR₂, B and C are each either a bond or a divalent linker group selected from alkylene, arylene, aralkylene, carboxyl -COO-, oxycarbonyl, -OC(=O)-, and carboxamide -C(=O)NR-, wherein m, n and p represent the mole fraction of the respective monomer units wherein p is from about 0.01 to about 0.1, m is from 0 to about 0.95, n is from about 0.05 to about 0.95, wherein Q is selected from phosphorus and nitrogen, each R is independently a straight, branched or cyclic alkyl group of 1 to about 20 carbons or an aralkyl group and the average total number of carbon atoms in the group QR₃ is at least 4 and Sens is an anionic photosensitizer group.

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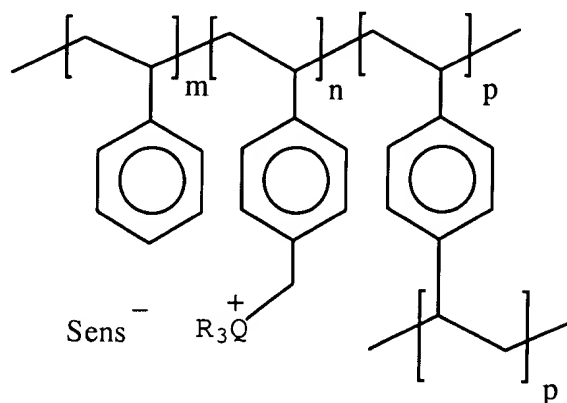
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Claim 15 (Original): The method of Claim 14 wherein the polymer-immobilized photosensitizer has the formula:

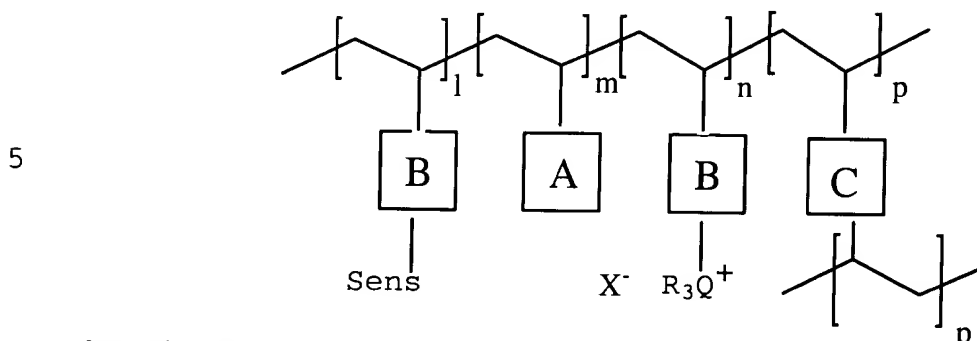
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wherein A is a phenyl group, B is a benzyl group, C is a p-phenylene group.

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Claim 16 (Original): The method of Claim 14 wherein the polymer-immobilized photosensitizer has the formula:



wherein A, B and C together with the two carbons of the polymer chain represent ethylenically unsaturated monomer units which can include alkyl substituents on the chains, A is a monovalent group selected from hydrogen, halogen, alkyl, aryl, aralkyl, carboxyl ester $-COOR$, oxycarbonyl, $-OC(=O)R$, and carboxamide $-C(=O)NR_2$, B and C are each either a bond or a divalent linker group selected from alkylene, arylene, aralkylene, carboxyl $-COO-$, oxycarbonyl, $-OC(=O)-$, and carboxamide $-C(=O)NR-$, wherein 1, m, n and p represent the mole fraction of the respective monomer units wherein p is from about 0.01 to about 0.1, m is from 0 to about 0.95, n is from about 0.05 to about 0.95, 1 is from about 0.05 to about 0.95, wherein Q is selected from phosphorus and nitrogen, each R is independently a straight, branched or cyclic alkyl group of 1 to about 20 carbons or an aralkyl group and the average total number of carbon atoms in the group QR_3 is at least 4, wherein X is selected from halide and sulfonate ester and Sens is a photosensitizer group.

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Claim 17 (Original): A method for oxidizing an oxidizable compound comprising admixing an oxidizable compound and a polymer-immobilized photosensitizer in a solvent, providing oxygen to the reaction mixture and irradiating the mixture
5 with light to produce singlet oxygen for reaction with the oxidizable compound wherein the polymer-immobilized photosensitizer comprises a cross-linked polymer backbone to which is bound a plurality of photosensitizer groups and a plurality of cationic groups $^+QR_3$ wherein Q is selected from
10 phosphorus and nitrogen, each R is independently a straight, branched or cyclic alkyl group of 1 to about 20 carbons or an aralkyl group and the average total number of carbon atoms in the group QR_3 is at least four.

Claim 18 (Original): The method of Claim 17 wherein each Q in the polymer-immobilized photosensitizer is a phosphorus atom, the average total number of carbon atoms in the group QR_3 is from 12 to about 30 and the photosensitizer group is Rose
5 Bengal.

Claim 19 (Original): The method of Claim 17 wherein the photosensitizer groups are covalently linked to the polymer backbone through linker groups.

Claim 20 (Original): The method of Claim 17 wherein the photosensitizer groups are bound to the polymer by electrostatic attraction to the cationic groups.

Claim 21 (Original): The method of Claim 17 wherein the oxidizable compound is selected from vinyl ethers, vinyl sulfides, enamines, non-activated alkenes, dienes, and sulfides.

Claim 22. The method of Claim 17 used to prepare a dioxetane compound from a vinyl ether by a 2 + 2 cycloaddition reaction with singlet oxygen.